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| APPLICATION NO.   | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/572,954  | 06/10/2008  | Min-Woo Lee          | P-0769              | 4793             |
| 34610 7590 11/12/2009<br>KED & ASSOCIATES, LLP<br>P.O. Box 221200<br>Chantilly, VA 20153-1200 |             |                      |                     |                  |
| EXAMINER  |             |                      |                     |                  |
| JACOBS, TODD D  |             |                      |                     |                  |
| ART UNIT  |             | PAPER NUMBER         |                     |                  |
| 3746  |             |                      |                     |                  |
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/572,954

**Applicant(s)**

LEE, MIN-WOO

**Examiner**

TODD D. JACOBS

**Art Unit**

3746

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 13 July 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 July 2009 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-8508)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_
- Paper No(s)/Mail Date \_\_\_\_\_

### **DETAILED ACTION**

1. This office action is in response to the amendment of 7/13/2009. Note that in making the below rejections, the examiner has considered and addressed each of the applicant's arguments/amendments.

#### ***Claim Objections***

2. Claims 3-6 are objected to because of the following informalities: Each claim states "elastic parts is wound" and should be "elastic parts are wound". Note that this doesn't change the interpretation that was taken in the previous non-final office action. Appropriate correction is required. Please ensure this error is fixed if in other parts of the claims.

#### ***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 9-13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 9 states "the mass part" but there are two mass parts so it is unclear if this is intended to be one or both mass parts. For the purposes of this examination, it will be interpreted that this is just one (just as on the previous non-final office action). Please ensure that all other potential indefinite errors are fixed in this application.

#### ***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tack (6,485,271) in view of Meier et al (6,382,607).

7. In re claim 1, Tack discloses a reciprocating compressor comprising:

- a casing including a suction pipe (12) through which a fluid is introduced from the outside and a discharge pipe (13) through which the fluid is discharged outside and forming a predetermined internal space;
- a compressor main body positioned in the casing, compressing the fluid introduced through the suction pipe with a linear reciprocating motion of a piston (7) and discharging the compressed fluid through the discharge pipe.

8. However, while the supporting unit (shown in Fig 4) does include including a plurality of coil springs (20, and there are two of these) connecting the compressor main body to the casing, plurality of coil springs includes end coils tightly wound so as to be fixed to one surface of the compressor main body and to one surface of the casing, respectively, Tack may fail to disclose an inner coil having at least one part which is tightly wound and positioned between the end coils.

9. Nevertheless, Meier discloses a spring that has two end coils (end coils are interpreted to be as shown on Fig 9, the far left and right, not including the transition inside of each of them [and note: only including 3 "winds", found by counting 3 of the cross-sectional up/down pieces, seen in Fig 9a]) with a tightly wound portion between (30). This represents a spring known in the art to be usable to gain certain non-linear spring characteristics. Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to modify Tack in view of Meier in order to have non-linear spring characteristics, known to be useful for attenuating in the art. Note that the below rejections making reference to the spring and its parts are all in reference to Meier, unless otherwise stated.

10. In re claim 2, Tack/Meier discloses the compressor of claim 1, wherein the inner coil comprises: a pair of elastic parts (Meier 32 and 28, as explained above, this includes the transition from the end coils to the mass 30) respectively wound from the end coils at predetermined pitches; and a mass part (30 of Meier) tightly wound between the pair of elastic parts.

11. In re claim 3, Tack/Meier discloses the compressor of claim 2, wherein each of the elastic parts is wound at regular pitches. Note that regular according to Merriam-Webster's dictionary means "formed, built, arranged, or ordered according to some established rule, law, principle, or type". The order is that the pitch increases then decreases from each end portion to the mass part.

12. In re claim 4, Tack/Meier discloses the compressor of claim 2, wherein each of the elastic parts is wound at pitches increased as it goes from the end coil toward the mass part. Note that this occurs just after the end coils along the spring toward the mass part.

13. In re claim 5, Tack/Meier discloses the compressor of claim 2, wherein each of the elastic parts is wound at pitches decreased as it goes from the end coil toward the mass part. Note that this is when the spring is closer to the mass part than the end coil part but still going toward the mass part.

14. In re claim 6, Tack/Meier discloses the compressor of claim 2, wherein each of the elastic parts is wound at pitches increased and decreased alternately between the end coil and the mass part. This occurs as the elastic part goes from the beginning (end coil) to the end (mass part).

15. In re claim 7, Tack/Meier discloses the compressor of claim 2, wherein the winding number of the mass part is two to approximately four times as many as that of one of the end coils. Note that winding number is not described in the specification or in the claims and is

interpreted to be the number of times a coil wraps around a certain area. For instance, the mass part as described above has a winding of around 25-30, the end coil is 3 as explained above, found by counting the cross-sectional circles seen as in Fig 9a of Meier.

16. In re claim 8, Tack/Meier discloses the compressor of claim 1, wherein the inner coil comprises: a pair of mass parts (see Meier, the pieces including the 4<sup>th</sup> end coil [just after the end coil] to the 9<sup>th</sup>; note that these have mass and can thereby be described as mass parts; further note that all coil numbers such as "9<sup>th</sup>" as shown above are counted from the outside to the inside) tightly (tightly is relative, almost all coils are tightly wound by definition) wound right next to the end coils; and an elastic part (the elastic part is not on both sides as many other parts, it is only found on the right side of the non-linear spring; specifically it is the right side elastic part of Meier that includes 11th end coil from the right to the center portion 30) positioned between the pair of mass parts and wound at pre-determined pitches.

17. In re claim 9, Tack/Meier discloses the compressor of claim 8, wherein the winding number of the mass part (equal to six as defined above) is two to four times as many as that of one of the end coils (3 as defined above).

18. In re claim 10, Tack/Meier discloses the compressor of claim 9, wherein the elastic part is wound at regular pitches (with regular defined above).

19. In re claim 11-13, Tack/Meier discloses the compressor of claim 9, wherein the elastic part is wound at pitches decreased at it goes toward a central portion of the coil spring (in Meier Fig 9, from the mass part, ie from the 9<sup>th</sup> winding and moving inside, the elastic part has pitches that increase, then stay constant, then decrease).

20. In re claim 14, Tack/Meier discloses the compressor of claim 1, wherein the inner coil comprises:

- a first elastic part (Meier, from the end coil to the portion 30) wound from the end coil fixed to one surface of the compressor main body at predetermined pitches;
- a second elastic part (same as first, but other side) wound from the end coil fixed to one surface of the casing at predetermined pitches that are different from those of the first elastic part (note that there is no pattern/direction described on how to compare the pitches of these two elastic parts; for instance, from left to right of both elastic pieces shows that these are clearly different, while from inside to outside, these pieces appear to be the same; this has been interpreted to be the former, however, and meets the claim limitation); and a mass part (Meier 30) tightly wound between the first and second elastic parts.

21. In re claim 15, Tack/Meier discloses the compressor of claim 14, wherein the first and second elastic parts respectively have regular pitches, and the two pitches are different from each other (see the above rejection of claim 14 and note that the far left of one elastic part has a different pitch than the other's far left pitch).

22. In re claim 16-18, Tack/Meier discloses the compressor of claim 14, wherein the first and second elastic parts are wound at pitches increased as it goes toward the mass part, and the increasing ratios of the pitches of the first elastic part and the pitches of the second elastic part are different from each other. Note that depending on the start/end point to measure the ratio, Tack/Meier discloses this. For instance, consider that the pitch goes from a minimum 1cm to a maximum 2cm while it is increasing. On one of the elastic parts, depending on how measured, there will be a ratio of 1/2, however, on the other, there could be a ratio of 1.5/2 – the ratio needs a distinct start and end point, and since there is none, sections that have different ratios can be seen in Tack/Meier. In other words, there is a portion on the first elastic part that increases pitch at a different rate than some other portion of the second elastic part. Further,

even if the above wasn't true, the claim also appears to be able to be interpreted that the ratios of the first elastic part are different from the pitches of the second elastic part, which is clearly true in the case of Tack/Meier. Note finally that since the pitches increase, stay constant then decrease the limitations of claims 17-18 are also met.

23. In re claim 19-21, Tack discloses the compressor of claim 14, wherein one of the first and second elastic parts is wound at regular pitches (using the definition shown above, each side has regular pitches), and the other elastic part is wound at pitches increased and decreased as it goes toward the mass part (as shown on Fig 9 of Meier, since these both increase and decrease it meets the limitations of claims 20-21).

#### ***Response to Arguments***

24. Applicant's arguments have been considered but are moot in view of the new ground(s) of rejection. Applicant remarks are only geared toward the newly amended claim 1 (ie, the amendment on line 9 of claim 1, "wherein each of the plurality of coil springs includes..." ) and that rejection is explained above.

#### ***Conclusion***

25. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. 6,193,225 to Watanabe discloses non-linear springs with asymmetric pitches (see Fig 1 of Watanabe; this and other similar art references would likely meet the limitations of a correctly claimed spring of Fig 12 in the instant application [ie, asymmetric pitches]).

26. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).



A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to TODD D. JACOBS whose telephone number is 571-270-5708. The examiner can normally be reached on Monday - Friday, 7:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Devon Kramer can be reached on 571-272-7118. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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